

The expert-public interface in municipal waste management decision making: exploring opinions from stakeholder groups

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Abstract

Local authorities need to find more effective ways to engage communities because public participation in collection schemes and acceptance of municipal waste facilities are integral to delivering effective waste strategies. The technical expertise politicians relied on in the past, to produce cost-effective and environmentally sound solutions, no longer provides sufficient justification to approve waste facilities. A new conceptualization of the relationship between science and politics, whereby there is some balance in the use of expert and local knowledge, is required to legitimize waste policy decisions. This paper aims to develop a better understanding of what happens at the interface between 'expert' and 'public' in municipal waste management decision making. It establishes opinions on the extent to which public values and preferences may be considered in practice in order to avoid or resolve controversial issues by gaining public consent.

Keywords:

Municipal waste management, decision making, expert and public knowledge, consultation, participation, energy from waste, incineration, mechanical biological treatment

Introduction

The siting of municipal waste treatment and disposal facilities in the UK has been met with public opposition, delays and, in some cases, the need to abandon facility proposals (Petts 2004; Petts 1992; Furuseth and O'Callaghan 1991). Siting waste facilities, particularly energy from waste (EFW) has proved problematic because citizens have associated these facilities with a variety of social, economic, political and legal concerns (e.g. health risks, reduction of property values and community attractiveness, facility control and operation). Such opposition exposes a weakness in approaches taken by local authorities to effectively balance regional needs with local impacts (Morell and Magorian 1982). Despite the UK Government's commitment to increase levels of public involvement in local waste management decisions, exercises conducted to date have largely been confined to 'traditional'

modes of participation such as the dissemination of information and encouraging feedback on facility proposals through, for example, questionnaires or surveys (ODPM 2002; Petts 2000). These approaches sometimes fail because public participation has been limited to 'the public right to know', 'informing the public' and the 'public right to object'. The ability to define interest, identify the actors, determine the agenda, assess risks, recommend solutions and take part in the final decision has not been open to residents in the community or the public at large (Wiedemann and Femers 1993).

Such analysis suggests that there is a more fundamental role for the public in decision making, whereby they can influence the generation of data and the derivation of policy options as well as discuss the acceptability of the final decision. Scientific evidence and expertise are essential in relation to certain technical elements of the debate (e.g. health risks associated with emissions from landfill and incineration) but local experiences and anecdotal knowledge are relevant to others (e.g. economic, management and operational aspects) (Petts, 1997). Risk decisions (i.e. problems related to technological or social hazards and other controversial issues) must take account of expert as well as public knowledge to be considered effective and acceptable to the range of interested and affected parties. Such decisions should be based on the integration of technical analyses of, for example, waste management options with scientific analyses of social impacts, within an explicit decision making model with clear criteria, and involving stakeholder and lay public consultation and participation, in contrast to the more traditional top-down approach (Culyer 2005; Petts 2004; Stern and Fineberg 1996).

More attention is now being paid to public understanding of the practices of science, in particular to public views on the institutional structure of science and the motivations behind claims to expertise and trust in science (Sturgis and Allum 2004; Bauer *et al.* 2000). However, few studies have been conducted to understand what happens at the interface between 'expert' and 'public' in the waste management context to make the processes for public involvement and communication fair and competent. There is a need to see whether the actual activity of interfacing or interacting can mediate between different interests and be adapted to improve the management of disputes and promotion of consensus (Petts 1997).

This paper draws from a programme of research established to explore the socio-technical nature of the municipal waste problem in the UK. The main objective is to develop a framework for designing appropriate strategies for combining methods of analysis and deliberation in delivering municipal waste management decisions. It is expected that the research will identify opportunities for legitimizing decisions through improved dialogue and mutual understanding between policy makers, industry experts and the public. The primary focus is on decisions related to the selection and installation of waste treatment and disposal facilities, particularly controversial ones such as EFW. The research addresses the opinions and attitudes of stakeholders in relation to:

- waste policy and solutions (e.g. alternative technologies to landfill)
- priorities and judgments (i.e. in considering waste management options)
- political will, public concerns and experience with alternative technologies (e.g. EFW), and
- public involvement in waste management strategy and facility planning.

There are three main elements to the research programme:

- 1) a qualitative study involving a series of 32 interviews with key stakeholders across the UK waste sector

- 2) a large-scale survey of opinions and attitudes on different strategies for public involvement, potential impacts and outcomes of decisions
- 3) two case studies to assess the implementation of the framework empirically and make recommendations on its appropriateness and practicality for local authorities

The paper presents preliminary findings from the qualitative study. It generates a typology of variations in perceptions of the waste problem by exploring how issues are framed by industry experts (or policy makers) and interested and affected citizens. The objective is to establish opinions on the extent to which public values and preferences may be considered in practice, to avoid or resolve controversial issues and gain public consent. The following section compares two contrasting decision making models in relation to the role of experts and the public in the decision process and the implications for democratic processes (i.e. political power and public representation), trust and acceptance of waste management decisions.

Decision Making Models

There are two distinct perspectives on how risks should be defined, communicated and managed in environmental matters which have fuelled debate on whether stakeholders and ordinary citizens should be involved in decision making (Rowan 1994 cited in Gurabardhi *et al.* 2005). There appears to be a fundamental split between the top-down consultative approaches, where decision making power still lies with competent authorities, and bottom-up approaches where power is shared with interested and affected parties. These two conflicting positions represent different sides of a 'legitimization dilemma' which policy makers and experts are confronted with in modern mass democracies.

Technocratic Model

The conventional 'technocratic' perspective is that decisions regarding technological and social hazards should be made by experts and scientists with relevant knowledge (Rowe & Frewer 2000, cited in Gurabardhi *et al.* 2005). The technical definition of risks used in the assessment of environmental impacts is the likelihood of harm or loss from a hazard, which usually includes (1) an identification of what is 'at risk' and may be harmed or lost (e.g. health of human beings or an ecosystem, quality of life etc.) (2) identification of the hazard that may cause the loss, and (3) an assessment or judgment about the likelihood that harm could occur (Stern and Fineberg 1996). The decision on how risk should be managed is usually based on knowledge of the type of risk and the likelihood of occurrence.

The support for the technocratic position is that operational and policy risks are best handled by officials (or experts on behalf of the relevant authority) and the presumption is that expert knowledge increases the degree of certainty and legitimizes outputs which provide the power to get things done. The focus is on persuading people to accept expert judgments, or calming down the concern of citizens (Gurabardhi *et al.* 2005). The expert's role is to communicate the risks to citizens by educating them on issues of 'real' importance and correcting misperceptions of risks (i.e. filling a knowledge deficit). Involving the public in risk decisions is seen to compromise the objectives of efficient and effective policy implementation or violate the principle of fairness where some interests are likely to override others in steering the direction of policy (Okrent 1998, cited in Renn 1999).

This narrow definition of the problem shows a clear preference for 'objective knowledge' over 'subjective values' and reduces a range of options to an objectively determined singular best solution. More generally, the model is imbedded in the political concept of 'representative democracy' – a system of decision making founded on the exercise of popular

sovereignty by the people's representatives. In waste management, decisions are controlled by representatives, elected through a contested rather than consensual process, so the result is a decision making process institutionalised by conflict between political parties. The involvement of the wider public is generally through traditional approaches such as consultation (an information and education exercise). If used as the total extent of participation, this approach tends to give citizens little say and decision making is left entirely in the hands of the authorities (Fisher 1999; Arnstein, 1969). It reduces politics to a scientifically rational administration where the politician is fully dependent on the expert who is responsible for resolving the impact of uncertainty arising from alternative interpretations of the decision (Weingart 1999). The process is centred on discussion for action, without reference to underlying beliefs and values. The crucial and problematic assumption of the technocratic model is the notion of a quasi-natural, one-dimensional direction of scientific and technical development. Over-reliance on scientific expertise in policy-making has the potential to de-legitimize outputs and results in the loss of authority of scientific expertise (Habermas 1966, cited in Weingart 1999).

Democratic Model

In contrast to the technical view, the democratic position considers risk decision making as best undertaken through a constructive dialogue among policy officials, stakeholders and the general public. It stresses social and cultural values and emphasizes the need to involve all interested and affected parties in the process (Gurabardhi *et al.* 2005). In this case, risk has a non-technocratic, values-accommodating definition. Rosa (1998, p.28) said that risk is “a situation or event in which something of human value (including humans themselves) has been at stake and where the outcome is uncertain.”

The democratic perspective appears to be imbedded in the political concept of deliberative democracy, a system of political decision making based on some trade-off between direct and representative democracy (Cohen 1989). The approach involves participatory methods such as citizen panels and juries for public involvement, which increase the degree of influence for citizens in that they can enter into communicative partnerships to negotiate and engage in trade-offs with decision makers. The final decision is based on a rationally-motivated consensus where the ideal is to find an acceptable balance between regional needs and local impacts. However, if this is not possible a decision is taken by the relevant authority for the greater good of the community.

The democratic model embraces aspects such as fairness and the claim that ordinary citizens should be able to influence decisions that affect their livelihood, security, safety and health (Fiorino 1990; Renn *et al.* 1995, cited in Gurabardhi *et al.* 2005). To address concerns associated with the technocratic model, Habermas introduced a more pragmatic model that combines elements from both the technocratic and democratic perspectives, to introduce a reiterative communication process between experts and the public. He envisaged that the development of policies would be directed by interpreted value systems and, at the same time, the different interests reflected in these value systems (i.e. social, technical etc.) would be controlled by examination in the light of technical possibilities and the strategic means of their satisfaction. According to Weingart (1999), Habermas's model captures best the iterative process of the definition of problems, their translation into policy issues, their re-definition in light of available new knowledge, and the translation of knowledge into decisions.

The rationale for each decision model is summarized below (table 1):

Table 1: Rationale for Technocratic vs. Democratic Perspectives

Technocratic	Democratic
Trust in scientific methods, evidence and explanations	Trust in political culture and democratic process
Appeal to authority and expertise	Appeal to folk wisdom, peer groups and cultural tradition
Boundaries of analysis are narrow and reductionist	Boundaries of analysis are broad and include use of analogy and precedent
Risk is depersonalised, focusing on measures of statistical variation and probability and thus addressed in 'unemotional' logical manner	Risk is personalised with emphasis on impacts on the community and family
Concerns and issues that cannot be described or clearly expressed are disregarded	Unanticipated or unarticulated issues or concerns are relevant

Based on Krimsky and Plough (1998)

A More Pragmatic Approach to Decision Making

A new conceptualisation of the relationship between science and politics is required in order to legitimise public decisions, whereby some balance in the use of expert and local knowledge may provide a solution to the legitimization dilemma (Weingart 1999; Jasanoff 1990). The 'analytical-deliberative process', an approach that balances analysis and deliberation with interested and affected parties in risk-based decision making, was developed in 1996 by the United States National Research Council (NRC) and has proven a viable approach to public involvement. It has been used to address challenges inherent in developing and implementing policies on a wide range of environmental issues. For example, in the US, it was used to study energy policies, water quality standards and sludge disposal strategies (Stern and Fineberg 1996). In Western Europe (Germany and Switzerland), a modified approach has been applied to studies of waste disposal issues (Renn 1999). The approach is based on participatory decision making that explores the social and technical nature of risk decisions and involves appropriate policy makers and specialists in risk analysis along with a wider group of stakeholders, who provide good representation of the citizens' interests, values and outlooks to complement the technical expertise.

Combining technical expertise, rational decision making, and public values and preferences in a fair and equitable way presents a challenge for decision making in a highly politicized environment such as waste (Renn 1998; Krimsky and Plough 1988). Research on nuclear waste management found that trust in the fairness of the facility siting process (i.e. obtaining public consent), the dissemination of important information, the credibility of the industry operator, and the manner in which risk liabilities are distributed are critical to the formation of risk perceptions and to public accountability (Pijawka and Mushkatel 1992/1991).

Qualitative Study

Qualitative information was gathered from a series of 32 in-depth interviews, using open ended questions, to generate a typology of variations in perceptions of the waste problem. A modified problem-structuring technique (based on the soft system methodology devised by Checkland [1981]) was used to explore how issues are framed by experts (i.e. local authority officials, waste industry experts, government officials and regulators) and interested and affected citizens (i.e. environmental campaigners and other community groups). The analysis focuses on participants' interests and vision for change, the socio-technical context (the relevant expertise, interests, assumptions and judgement) and politics (i.e. disposition of power) in the decision situation. The process illustrates the desirability and feasibility of using more participatory approaches in waste strategy development and facility planning.

A Modified Approach based on SSM

In the light of this analysis, a pragmatic interpretation of SSM¹ was adopted for the qualitative study. The philosophical foundation is based on intersubjective reasoning which presents the idea of ‘critical realism’ (Robson 2002; Johnson and Duberley 2000), a model of scientific explanation which avoids both positivism and relativism. The philosophical view of this tradition is that there is no unquestionable foundation for science (i.e. no ‘facts’ that are beyond dispute), knowledge is a social and historical product, and ‘facts’ are theory-laden. The real world is viewed as complex and stratified into different layers, while social reality incorporates individual, group, institutional, and society levels (House 1991 cited in Robson 2002). Decision making is based on a trade-off of the different interests. The premise for success lies with the degree of ‘fit or match’ between underlying theoretical predictions and information collected. The presumption is that the decision maker is better able to function by basing decisions on both the theory and the deeper insight and greater confidence obtained from witnessing many different views of the problem (Mitroff and Tiroff 2002). The analysis is problem-oriented, where the focus is on exploring the issues fully before identifying a solution (or formulating action) (Figure 1).

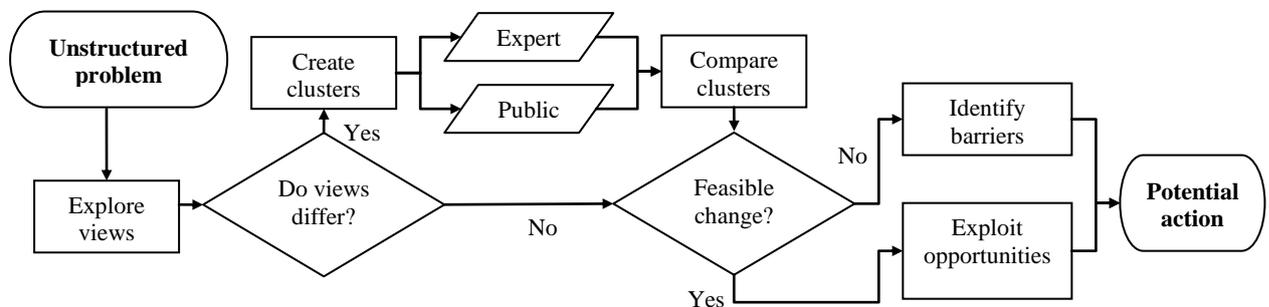


Figure 1: A problem-oriented approach.
Based on Checkland’s Soft System Methodology

Sample Representation

Participants were drawn from a range of backgrounds and with various interests in waste management. The interview sample was stratified into three categories according to common interest (key stakeholders, local authorities and citizen groups) to ensure a diverse range of parties was represented. Most participants in the citizen groups were selected from the same local authority districts in the sample to compare information gathered and assess issues related to misrepresentation, bias and reliability of evidence. Time and resource constraints meant that the sample was limited to a minimum of 10 participants from each sample group, which consisted of institutional and non-institutional organisations (Table 2).

Table 2: Sample Representation

Sample groups	Sub groups	Institutional and non-institutional actors
Key stakeholders	Government and government related	Government departments
		Government agencies
	Non-governmental	Non-governmental organisations
	Waste industry	Private sector organisations
		Waste academic associations
		Waste management companies

¹ SSM is an approach to organisational process modelling used for general problem solving and in the management of change. The methodology was developed from earlier systems engineering approaches, primarily by Checkland (1981). The primary use of SSM is in the analysis of complex situations where there are divergent views about the definition of problems, usually within a social context. In such situations even the actual problem to be addressed may not be easy to agree upon (e.g. the improvement of health care services). To intervene in such situations the soft systems approach uses the notion of a ‘system’ as an interrogative device that will enable debate amongst concerned parties.

		Waste management consultants
Local Authorities	Local government	Unitary authorities
		Waste disposal authorities
		Waste collection authorities
Citizen Groups	Environmental	Community networks/organisations on waste
		Environmental campaign groups
		Community action groups
	Citizens	Members of Citizen Advisory Panels on Waste
		Convenors / facilitators of stakeholder engagement processes

Form of Analysis

The analysis of interview data was systematic. It captured in a contextualised form (i.e. political, social, technical etc.) the main entities, structures and viewpoints of the waste problem, the processes going on and the main issues. Throughout the analysis, new themes to emerge, particularly local examples, were brought into the analysis to provide evidence of participants' judgement, interest or positions on waste management.

Preliminary Findings

The analysis revealed complex relationships between experts (or policy makers) and citizens; and illustrates how each group perceives, acts on and negotiates their interests in relation to waste policy. The intellectual and emotional energy of participants is focused on conflicts between political, social, economic and philosophical values, particularly as they relate to siting controversial waste facilities such as EFW.

Exploring Views of the Problem

Some of the key findings to emerge from the interviews are described below, and grouped under the main themes of the research.

1) *Waste policy*

Participants debated whether EFW was inconsistent with sustainable waste management. A participant from the waste industry felt that government ought to adopt a more positive policy towards EFW as a source of energy production in the UK and suggested that this would allow "local authorities to argue incineration is efficient, provides the best use of resources and most importantly is safe." By contrast, an environmental group felt there are disadvantages associated with EFW: "incinerators can take 7 years to build...there will be huge shortfalls in terms of meeting the targets and local authorities may face paying out millions of pounds in the interim". A local authority felt public acceptance of waste facilities is necessary for authorities to meet imminent targets for landfill diversion: "even with MBT, we need residual treatment technology to meet the 2013 targets...it is almost inevitable that any major treatment facility will go to public enquiry which creates significant delays in the planning process."

Most environmental groups supported higher levels of recycling for more efficient resource use. An environmental lobby felt a more ambitious target of 80% recycling could be achieved: "there are tangible benefits to recycling, not just a percentage benefit...with kerbside schemes you recycle locally and get a cleaner feedstock which generates business, particularly if the use of virgin materials is replaced". In contrast, a participant from the waste industry felt recycling rates should be determined by available markets: "government has focused on the short-term subsidies of material collection in hope that producing larger volumes of materials will create markets for them, but actually most of these markets will be demand rather than supply led". One showed preference for "a more sensible mix" which would comprise 45% recycling, 45% thermal treatment with energy recovery and 10% landfill.

2) *Waste solutions*

In terms of the choice of alternative technology, most environmental groups support mechanical biological treatment (MBT), which they feel has more environmental benefits and are financially superior to incineration. A participant from a government agency felt that for the first time there are visible links between waste and climate change which should now drive forward renewable technologies such as EFW: “we need to move away from our dependence on biodegradable waste going to landfill. Now if authorities feel they can do that purely by recycling at kerbside then that’s good, but a lot of them are looking at whether there is an energy component that they can extract”.

A local action group felt long-term disposal contracts for EFW facilities tend to have limited operational flexibility over contract periods which potentially restricts recycling: "I know Sheffield has got a long-term contract for an incinerator and they have one of the lowest recycling rates in the country". Some participants from the private sector and environmental groups felt that many local authorities are over-specifying capacity for dealing with residual waste because they are basing it on unrealistic growth rates. One proposed that "large waste treatment facilities which cover more than one locality or different waste streams across localities have benefits related to economies of scale". A participant from the waste industry felt that EFW incineration is proven but there is much less experience with other emerging technologies such as gasification and pyrolysis in the UK: “mechanical biological treatment has an increasing role to play as long as there is something sensible to do with the outputs because at the moment there is no capacity to recover energy from refuse derived fuel (RDF)”. In terms of waste collection schemes, an environmental lobby showed support for source separation: "In Leeds, they do recycle but they 'chuck it all in one bin', which increases contamination and waste going to landfill". One local authority proposed "a factory-type sorting may be more cost effective than kerbside sorting, which is labour intensive".

3) *Stakeholders' priorities and judgement*

Participants debated priorities for developing deliverable waste strategies. One local authority participant felt that the deliverability of a waste strategy is not limited to meeting targets and wider environmental and economic goals. It also had to be a strategy that would encourage the public to “own, buy into and participate in”. He felt “a waste solution which would technically allow you to meet your targets and reduce cost might be one that would be difficult to deliver because of public opposition, getting planning permission for facilities and also for the public to buy into and participate in terms of collection service”.

Most local authorities prioritize landfill diversion targets, statutory recycling targets and costs of solutions over local environmental benefits and public satisfaction “heavy fines are faced if targets are not met ... recycling does not have financial penalties but is equally important in the public’s eye”. Some participants from industry felt that the main priority for residents is an efficient and cost effective service and that some citizens prioritize health and environmental impacts only if they live near waste facilities.

Some participants felt that with potentially contentious technologies such as EFW, local authorities need to be honest and candid with the public in terms of their motives, priorities and how they make their judgement. For instance, “if the priority is CO₂ reductions, then the net benefit of EFW in comparison with higher levels of recycling is a more attractive option”. One participant felt that by building EFW plants within local communities, government is prioritizing national benefits (from avoided CO₂ emissions) over local benefits (avoiding local emissions which potentially could have negative implications for human health).

Incinerators in this country are not equipped with state of the art abatement equipment. Although these reduce local emissions, it uses some of the energy generated. The Environment Agency, by not enforcing this measure, is implicitly making a trade-off between the value of energy generated and emissions that occur locally. Local people object to incineration on the basis of local emissions to which they are exposed, so the logical thing would be to accept the energy (and possible cost) penalty for the sake of trying to improve the public profile of these facilities. It is one of those areas where the views of experts clash with those of communities.
- Principal, Waste Management Consultant

Another participant felt that the use of objective methods such as life cycle analysis (LCA) and cost benefit analysis (CBA) to address questions of technological risks, environmental and social impacts provides a basis for making decisions in the interest of communities instead of individual fractions of the community. Transport is relevant here.

One of the most effective ways of appealing against a facility proposal appears to be dealing with the increase in transport. If you personalise the risk then I think you are sort of pandering to the NIMBYs so I think there has to be an element of independence...for the good of the community.
- Manager, Waste Academic Association / Waste Consultant

4) *Political will*

Some participants felt that politicians, like local authorities, do not want to be unpopular and so are driven to adopt waste solutions that are acceptable to the local populous but do not necessarily provide a solution to the waste management problem. A local authority situated in the North East explained their situation.

...our Liberal Democrat administration has a national policy against incineration so we have got a very difficult situation as it is coming out as the best technical option. The public is against it and the politicians have abstained from even considering it in their waste policy.
- Head, Sustainability Unit, Unitary Authority

One participant from the waste industry felt the imminent pressure of landfill diversion targets is driving politicians to be less “dogmatic” in their approach. A participant from a citizen panel felt politicians need to make long term strategic decisions that last over the lifetime of several local authority administrations to ensure solutions are sustainable. A local authority in London felt they needed to be more transparent and clear.

Our Waste Policy Statement states that the County Council will be adopting EFW as part of the waste solution. I think it is quite a bold thing for the County to do but it does show leadership in terms of what our stance is, even if everyone doesn't like it. It doesn't commit the County to EFW but it does make it clear it can be an option...it is about transparency
- Waste Planning Officer, Waste Disposal Authority

One participant from academia felt householders may be encouraged to take ownership of waste facilities if financial incentives are implemented. A participant from a local authority warned that mainstream society is against financial incentives to stimulate behaviour change.

We are aiming to provide the best services here in terms of what residents want. I think there are some unpopular decisions made regarding variable charging and there is growing objection by the public. You know the collective voice of the public can have a big impact as it did with the poll tax. They made huge changes and made the politicians sit up and take notice!
- Waste Management Officer, Waste Collection Authority

5) *Public concern and experience*

Participants generally felt that the public's stance on waste issues is related to experience or concerns associated with perceived risks and social impacts. A local action group felt communities would be more accepting of waste facilities if siting was done in a more equitable way.

...If incineration is what we are going to have then ok “share it out a bit”. All of sudden, the Council decided we were going to have one big plant and told us where it would be. You would expect a certain backlash wouldn't you? We felt let down by the system – they railroaded us!
- Chairman, Local Action Group opposed to Incineration

One local authority proposed “there is a big exercise we need to do in terms of public engagement and education so that people understand the need for treatment facilities”. Most participants from environmental groups felt that public education to encourage responsible behaviour (i.e. waste reduction and recycling) should have greater priority for local authorities. Some of these groups were seen by local authorities as uncompromising and radical in the position they take on incineration and most local authorities felt this made engagement difficult.

They purport to speak on behalf of the population but our suspicion is they speak on behalf of their own vested interest or through some philosophical standpoint. I think government and local authorities need to continue to evaluate scientifically the options and then we can put facts into the mix rather than emotion.

- Head of Waste Management, Unitary Authority

There are different views about public concern. Issues that featured frequently across all groups include traffic movements and emissions from landfill and EFW facilities, visual and socio-economic impacts (e.g. devalued property prices), and pollution from poorly operated waste facilities.

When we moved to this place I thought “surely a Council wouldn’t build an incinerator if they thought it was bad for the community”. It had scrubbers, electrical precipitators and all the filters you can think of and the Council really thought they were doing well with it. But the Byker incinerator was responsible for one of the largest pollution incidents in this country. Now I question everything they tell me...I don’t trust the ‘so-called experts’.

- Founder and Member, Environmental Campaign Group on Waste

Some participants felt that local authorities need to be more open and present a balanced reflection of the choice of technologies in order to engage the public and avoid opposition to waste facilities. One environmental group supported this position.

Education is the key...they didn’t do that here, the information that they gave was basically taken off the waste company’s website and they said “there is no choice – we either incinerate or we face huge fines”. To educate is not to give an opinion, it is giving a balanced reflection of the real choice. They did this in Cambridgeshire and they had no objections to the EFW plant because...they went in and engaged with the public.

- Management Campaigner on Waste and Resources, Environmental Lobby Organisation

6) *Public involvement*

There are different views about the level and form of public involvement implied by what waste industry and local authority representatives referred to as “up front consultation”. Participants had different views on the benefits of early engagement. One participant felt that engaging communities at the strategic level reduces opposition to waste facilities.

If campaign groups want to stop plan to build an incinerator on a particular site, they need to engage at the strategic level. By the time you get to planning it is only the local objectors that have a voice left. We need to face reality – people react when a facility affects them so you need to try and engage them at the strategic level for them to take a more joint ownership of the problem.

- Facilitator, Community Engagement, Waste Consultant Company

Some participants (mainly from waste industry and local authorities) felt that while public opinion is usually considered in decision processes, it is unlikely that citizens could ever influence final decisions because ultimately the type of facility, its location and the general benefit to society need to be debated by experts and politicians. One participant felt that engaging the public on waste issues could potentially polarize opinions and provide an excuse for not undertaking action.

I think that some of the discussion that takes place on waste with some community groups can be unhelpful because it is actually raising it into public awareness where perhaps it shouldn’t. This is probably a radical thing to say, but in some ways you do need national campaigns to raise the importance of things like recycling, but you don’t want people to input into other decisions because it doesn’t work – it polarises opinions and is an excuse for inaction.

- CEO, Private Sector Organisation

Generally participants (again, mainly from the waste industry and local authorities) felt that participatory approaches improve upon the traditional technocratic approach. There was a feeling that the right level of public involvement depends on the type of facility and local situation, and that traditional and deliberative methods have both advantages and disadvantages. Some participants felt that a fundamental problem with deliberative methods is finding the right techniques to deliver technical understanding without being patronizing to citizens. One participant was sceptical about whether the public could overcome their mistrust of experts to engage fully on waste issues. Other participants felt that involving citizens or "non-experts" in complex decisions could create misunderstandings and misrepresentation of issues.

One local authority explained how citizens were engaged to help assess waste management options: “we got residents to think about targets for recycling and preferences for different type of technologies and collection schemes and then we used that to identify the range of scenarios”. Another in the south east of England explained how consultation at the strategic level contributed to a more informed waste strategy. After the strategy was adopted, three EFW facilities were established. At the facility planning stage several community liaison groups were established and input from residents changed some aspects of the architectural design of facilities and the routing of waste vehicles to the facility. After the facilities were granted planning permission, the local liaison groups were reformed and continued to function during the construction phase to minimise impacts on the local community.

Other participants (mainly from local authorities) felt that “up front consultation” on the waste strategy is not always practical because to get a good public representation is not cost-effective. One suggested that consultation with a small group very early on and with the general public after the strategy has been developed might be a better approach. A participant from government suggested a more structured approach to consultation, in terms of careful selection of consultees, ensures that input from stakeholders is relevant and taken seriously by authorities. An environmental lobby felt any approach to selecting stakeholders and community groups should not limit representation from the range of people interested in waste and willing to participate, even though those in authority may feel their participation is not helpful to the process.

Vision for Change

Preliminary findings are summarised in Table 3, to compare participants’ vision for change. Potential action, opportunities and barriers are based on expert (or policy maker) and public’s view of the issues.

Table 3: Vision for change: a comparison of 'expert' and 'public' views

Categories	Potential action	Feasible change	
		Opportunities	Barriers
Experts (and policy makers)	A more positive policy on EFW as a source of energy	EFW seen to be environmentally sustainable (i.e. efficient, provides best use of resources and is safe)	Potential planning delays and shortfalls in meeting targets; limited operational flexibility with long-term waste contracts
	Local authorities need a 'more realistic mix' (e.g. 45% recycling, 45% EFW, 10% landfill)	Satisfy local demand for materials; reduce dependency on landfill; meet landfill diversion targets	
	Develop energy recovery potential for MBT	Achieve correct balance between EFW and MBT	Availability of markets for recyclables; uncertainty of technology

	Use of objective methods (e.g. LCA, CBA) as basis for judgements on waste management options	Depersonalize risks and prioritize interests of communities	National priorities take precedence over local priorities
	Introduce variable charging	Householders encouraged to take ownership of waste problem	Public willingness to pay; political support
	Adopt more structured approach to waste strategy consultation i.e. careful selection of consultees	Representative sample; information gathered is relevant; cost effective method	Limits citizens' influence on decisions; potentially restricts participation from wider public; distrust of experts; public misunderstanding and misrepresentation
	Set up community liaison groups during facility planning and construction	Minimise impacts on local communities	
Public (environmental campaigners and community groups)	MBT should be adopted for treating residual waste	Produce more environmental benefits and considered financially superior to incineration in the long-term; political and public support	MBT's requires residual waste treatment; public opposition to waste facilities
	Local authorities should aim for higher recycling targets (e.g. 80%); use source separated collection schemes	Produce larger volumes of materials; improve compositional quality; reduce resource use	High labour costs for source separated collection schemes; need to generate markets for recycle
	Produce independent assessment of local capacities to manage residual waste	More precise estimates of EFW capacity (e.g. plant size)	Unpopular; uncertainty of population and consumption growth rates
	Prioritize public education and awareness	Encourage householders to reduce waste, increase recycling and take ownership of waste problem	Local authorities have limited ability to achieve behavioural change among citizens
	More balanced reflection on choice of technologies i.e. at inception of waste strategy consultation	Reduced opposition to waste facilities; restore trust in experts	Uncompromising position of environmental lobby; public objection to waste facilities; public misunderstanding and misrepresentation
	Range of waste treatment facilities strategically located across the locality		

Conclusion / Key Messages

This paper has identified and explored an apparent increase in support across society for the use of deliberative methods in public policy on waste which, proponents argue, would improve upon the traditional technocratic approach. The findings suggest that an over-reliance on expert knowledge as the basis for decisions has the potential to stimulate greater objections to waste facilities and create delays in the planning process. Deliberative methods allow citizens to negotiate interests with local authorities and, potentially, find an acceptable balance between regional needs and local impacts. The findings suggest that the right level of public involvement depends on the type of facility and local situation; and that deliberative methods have both advantages and disadvantages. A large-scale survey of opinions and attitudes on different strategies for public involvement at strategic and facility planning level will enable these findings to be extrapolated to the wider population.

Some participants felt that engaging communities at the strategic level reduces public opposition to waste facilities by encouraging people to take joint ownership of the waste problem. However, there is scepticism on whether the public could regain confidence in experts to engage fully on waste issues. Some experts felt that a fundamental problem with deliberative methods is finding the right techniques to deliver technical understanding without appearing patronizing to citizens or “non-experts”. Most local environmental groups felt local authorities need to be more open in giving a balanced reflection of the choice of technology to engage the public and reduce opposition to waste facilities. Some participants from the waste industry questioned whether citizens should influence decisions on the type of facility or its location, on the grounds that these decisions are properly debated by experts and politicians, who tend to have different risk priorities to local communities. A few felt that involving the public in strategic planning is only practical when there is good representation of the population, which requires additional resources (e.g. funding).

Some local authorities have considered citizens’ values and preferences in assessing waste options and felt that this approach could potentially restore public trust in expertise and legitimize outputs of decisions. One local authority explained how public involvement at the facility planning level complemented engagement on the waste strategy to reduce local impacts associated with building and operating waste facilities.

References

- 1) Arnstein, S. (1969). “A ladder of citizen participation”, *Journal of the American Institute of Planners*, 35:216-24
- 2) Biffa, (2006). “Barker Review of Land Use Planning – Call for Evidence January 2006”, Biffa Waste Services.
- 3) Bauer, M., Petkova, K. and Boyadjieva, P. (2000). “Public Knowledge of and Attitudes to Science: Alternative Measures that the ‘Science War’”, *Science, Technology and Human Values*, 25(1):30-51
- 4) Checkland, P. (1981), "Systems Thinking, Systems Practice". Wiley, Chichester
- 5) Cohen, J. (1989). “Deliberative Democracy and Democratic Legitimacy”, from Hamlin, A. and Pettit, P. (eds), *The Good Polity*. Oxford: Blackwell. 17-34
- 6) Culyer, A. (2005). “Involving stakeholders in health care decisions – the experience of the National Institute for Health and Clinical Excellence (NICE) in England and Wales”, *Healthcare Quarterly*, 8:56-60
- 7) Fiorino, D. (1990). "Citizen Participation and Environmental Risk: A Survey of Institutional Mechanisms", *Science and Technology: Human Values*, 15(2):226-43
- 8) Fisher, F. (1999). “Technological deliberation in a democratic society: the case for participatory inquiry”, *Science and Public Policy*, 26(5):294-302
- 9) Furuseth, O. and O’Callaghan, J. (1991). “Community response to a municipal waste incinerator: NIMBY or neighbour” *Landscape and Urban Planning*, 21:163-171
- 10) Gurabardhi, Z., Gutteling, J. and Kuttuschreuter, M. (2005). “An empirical analysis of communication flow, strategy and stakeholders’ participation in the risk communication literature 1988 – 2000”, *Journal of Risk Research*, 8(6):499–511
- 11) Jasanoff, S. (1990). “The Fifth Branch”, Harvard University Press, Cambridge MA
- 12) Johnson, P. and Duberley, J. (2000). “Understanding Management Research”, Sage Publications, London
- 13) Krimsky, S., and Plough, A. (1988). "Environmental Hazards: Communicating Risks as a Social Process". Dover, Mass, Auburn House
- 14) Mitroff, I. and Murray, T. (2002). "Philosophical and Methodological Foundations of Delphi" *The Delphi Method: Techniques and Applications*, Murray Turoff and Harold A. Linstone Pub Ltd.
- 15) Morell, R. and Magorian, C. (1982). “Siting hazardous waste facilities: Local opposition and the myth of pre-emption”, Ballinger Publishing, Cambridge, Massachusetts
- 16) Office of the Deputy Prime Minister (ODPM), (2002). “Public Participation in Local Government: A Survey of Local Authorities”, ODPM. London.
- 17) Petts, J., (2004). "Barriers to participation and deliberation in risk decisions: evidence from waste management", *Risk Research*, 7(2):115-33
- 18) Petts, J., (2000). "Municipal Waste Management: Inequalities and the Role of Deliberation", *Risk Analysis*, 20(6):821-32
- 19) Petts, J., (1997). “The public-expert interface in local waste management decisions: expertise, credibility and process”, *Public Understanding of Science*, 6:359-381
- 20) Petts, J. (1992). “Incineration risk perception and public concern: experience in the UK. Improving Risk Communication” *Waste Management and Research*, 19:169-182
- 21) Pijawka, K. and Mushkatel, A. (1991/92). “Public opposition to the siting of the high-level nuclear waste repository: The importance of trust” *Policy Studies Review*, 10:180-194
- 22) Renn, O. (1999). “Analytical-Deliberative Process of Decision Making: Linking Expertise Stakeholder Participation and Public Values”, accessed on 17th November 2006 at <http://www.corwm.org.uk>

- 23) Renn, O. (1998). "The role of risk perception for risk management", *Reliability, Engineering and System Safety*, 26:191-214.
- 24) Robson, C. (2002). "Real World Research", 2nd Edition, Blackwell Publishing
- 25) Rosa, E. (1998). "Metatheoretical Foundations for Post-Normal Risk", *Journal of Risk Research* 1(1):15-44
- 26) Stern, P. and Fineberg, H. (Eds.). (1996). "Understanding Risk: Informing Decision in a Democratic Society". National Research Council, Washington D.C. National Academy Press
- 27) Sturgis, P., and Allum, N. (2004). "Science in Policy: Re-evaluating the Deficit Model of Public Attitudes," *Public Understanding of Science*, 13: 55-74
- 28) Wiedemann, P. and Femers, S. (1993). "Public participation in waste management decision making: analysis and management of conflicts", *Journal of Hazardous Materials*, 33(3):355-68
- 29) Weingart, P. (1999). "Scientific expertise and political accountability: paradoxes of science in politics", *Science and Public Policy*, 26(3):151-161